



Regular Article

Mō Tātou, Ā, Mō Kā Uri Ā Muri Ake Nei: Visioning Mokopuna Futures Through Climate Change Adaptation Strategies

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Abstract In Murihiku Southland in Aotearoa New Zealand, Māori are already responding and adapting to the impacts of climate change. Drawing on twenty interviews with Māori leaders, environmental practitioners, and knowledge holders, this kaupapa Māori (Māori-led) study examines perspectives on adapting to climate disruption. Interviewees identified a range of whakapapa (ancestry)-based adaptation strategies rooted in intergenerational care, cultural continuity, and relational governance.

Guided by Te Kahu Huru huri o Kohikohi methodology (Kaiser et al., 2025) and Callon's (1998) framing theory, the research analyses how participants contest deficit-based externalities of climate disruption, such as land dispossession, environmental degradation and reframe adaptation through four interconnected strands - whakapapa-based adaptive infrastructure, kaitiakitaka, ahi kā and utu; kotahitaka and strategic relationships; and visioning mokopuna futures. These responses transform externalities such as cultural erasure, land dispossession, and youth exclusion into overflows: creative, relational practices that exceed the boundaries of formal climate planning.

Findings show that Murihiku whānau are restoring whenua, revitalising mahika kai, and embedding intergenerational knowledge in governance. Adaptation is framed not as a technical fix but as a relational obligation, enacted through kaitiakitaka, cultural resurgence, and mokopuna-centred planning. Participants emphasised the importance of imagination, storytelling, and strategic leadership in preparing future generations to navigate climate change.

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This study contributes to Indigenous climate change scholarship by demonstrating how Māori-led adaptation strategies challenge technocratic framings and offer culturally grounded alternatives. It calls for planning frameworks that honour whakapapa, support mātauraka Māori, and uphold mana whenua governance.

Keywords: kaupapa Māori, adaptation, climate change, indigenous, whakapapa, strategies

1. INTRODUCTION

Takata Whenua⁶ (Indigenous Māori Peoples of Aotearoa New Zealand) have long enacted climate adaptation through whakapapa (genealogy)-based governance, ecological restoration, and intergenerational knowledge transmission. Across whānau (families), hapū (sub-tribes), iwi (tribes), and marae (community centres), Māori communities respond to environmental change not as passive recipients of external solutions, but as active kaitiaki (stewards/guardians) drawing on ancestral knowledges, cultural practices, and relational responsibility.

Yet, mainstream climate adaptation literature frames Indigenous communities primarily through deficit-based lenses (Kenney et al., 2023), emphasising vulnerability (Johnson et al., 2022) while overlooking strategic, intergenerational, and place-based responses already underway. These framings often exclude cultural, spiritual, and ecological dimensions central to Māori wellbeing and fail to recognise *whakapapa* as living infrastructure for adaptation.

This article examines how Kāi Tahu in Murihiku (an Iwi or tribe in the South of Aotearoa New Zealand) experience and respond to climate disruptions, including coastal erosion, inundation, and ecosystem degradation. The discussion focuses on four interconnected strands of adaptation: *whakapapa* (genealogy) as adaptive infrastructure; *ahi kā* (sustained occupation) and utu (balance and restoration), *kotahitaka* (unity and relationships), and visioning *mokopuna* (next generation) futures. These themes emerged through narrative thematic analysis of *kōrero* with twenty Māori participants, privileging Māori ways of knowing and relational storytelling.

Guided by Te Kahu Huruwhiri o Kohikohi (Kaiser et al., 2025), the research employs a *Kaupapa Māori* (Māori-centred) bricolage methodology weaving *kaumātua* (elder) wisdom, *rakatahi* (youth) innovation, ecological science, and policy critique. It draws on Callon's 1998 concepts of framing, externalities, and overflows to explore how participants contest externally imposed narratives and reconstruct them, guiding adaptation through relational, cultural, and intergenerational logics.

Institutional climate change planning policies and public narratives circulating across national and regional levels have historically excluded cultural and ecological dimensions

⁶ This article uses the Southern Kāi Tahu dialect of Te Reo Māori, an official language of Aotearoa New Zealand. A glossary containing concise and contextual definitions of key Māori terms is provided at the conclusion of the article. McAllister et al. (2023) provide.

central to Māori wellbeing or treated them tokenistically (Johnson et al., 2024; Taiapa et al., 2025). This research illustrates how Kāi Tahu ki Murihiku *whānau* (families) contest dominant narratives positioning Indigenous communities as vulnerable or passive, and instead reframe *whānau*-based adaptation as culturally grounded, strengths-based practice.

Findings document that Murihiku *whānau* are already adapting to climate change by restoring *whenua* (land), revitalising *mahika kai* (customary food gathering practices and sites), embedding *whakapapa* (ancestry) in governance, and preparing *mokopuna* (future generations) for leadership. *Whānau* strategies are deliberate and intergenerational. By centring *kaupapa* Māori (Māori values), *mātauraka* Māori (Māori knowledge), and *tikaka* Māori (Māori practices), *whānau* enact effective and sustainable frameworks for climate adaptation.

2. BACKGROUND

Indigenous climate adaptation is grounded in intergenerational knowledge and relational governance, with global evidence showing diverse responses. In the Pacific, urban case studies in Kiribati, Samoa, and Vanuatu demonstrate how Indigenous ecological knowledge guides nature-based and hybrid measures for coastal protection and wellbeing (e.g., mangrove and habitat restoration in Kiribati and Samoa, and ecosystem-based actions in Vanuatu) (Kiddle et al., 2021). Complementing these, Tuvalu's coastal programme at Fogafale (Funafuti Atoll) illustrates a locally led adaptation pathway that creates raised land and integrates community knowledge with engineered design (UNDP, 2023). Framing this socio-culturally, García-Acosta's historical–anthropological work shows that vulnerability, risk, and adaptation are socially constructed through memory, institutions, and power. The above literature demonstrates that Indigenous adaptation is inseparable from the cultural and governance infrastructures that enable collective action (García-Acosta, 2011; 2020)

As Indigenous peoples of Aotearoa, Kāi Tahu ki Murihiku have long maintained holistic relationships with *te taiao* (the environment), guided by principles such as *whakapapa*, *kaitiakitaka* (stewardship), and *mana motuhake*⁷ (self-determination) (Ministry for the Environment, 2022). Recent scholarship highlights the need for climate adaptation models that reflect Māori worldviews and governance structures, rather than frameworks developed in Western policy contexts (Bailey-Winiata et al., 2024; Blackett et al., 2022; Kaiser & Kenney, 2022; Jones et al., 2024). The Intergovernmental Panel on Climate Change (IPCC)'s definition of adaptation as “In *human systems*, the process of adjustment to actual or expected *climate* and its effects, in order to moderate harm or exploit beneficial opportunities” (IPCC, 2022) is widely accepted; however, this definition lacks important cultural and relational context for Indigenous Peoples and Māori.

⁷ Some Māori terminology such as “*mana motuhake*” and “*tino rakatirataka*” have expanded definitions included within the glossary.

Academic literature explores the context of relationship-based governance for Māori and Indigenous climate adaptation. As examples, Johnson et al. (2022) emphasise that Māori women's adaptive capacity is shaped by relational dynamics within *whānau* and *hapū*, and that inclusive adaptation must engage with these realities. Taiapa et al. (2025) argue that Māori responses to climate change are grounded in expansive relational understandings, constrained by Western environmental constructs. Mackintosh (2025) presents a Māori-led adaptation model centring cultural values and collective governance. Wilson et al. (2022) highlight that Indigenous governance concepts are underrepresented in climate literature and call for recognition of Indigenous knowledge systems.

Additionally, the terms *strategies*, *practices*, and *actions* have their own cultural context. *Strategies* function as inter-generational focal plans for collective priorities and aspirations. Across Aotearoa New Zealand, *iwi* (Māori tribes) and *hapū* (sub-tribes) align strategies with cultural frameworks and values. Prominent iwi-led strategies released in the past decade are discussed in Kaiser & Kenney (2022) and Bailey-Winiata et al. (2024). For the purposes of this research, Te Rūnanga o Ngāi Tahu's climate change strategy *Te Tāhū o te Whāriki* (2018) and *Te Tangi a Tauira* (2008), (the combined management plan of the four Murihiku-based rūnaka) are the most relevant as they both directly address climate change concerns and aspirations.

These strategies deliberately reframe climate adaptation within Māori worldviews. Kāi Tahu ki Murihiku climate action is reclaiming power by foregrounding Māori concepts of *whakapapa*, *kaitiakitaka*, *kotahitaka*, and *mokopuna* futures as central organising principles (Kaiser, 2026).

The term *Practices* is used in this study to refer to enduring *tikaka* (cultural practices and ways of doing) that enact these strategies and reinforce cultural identity over time. These include *mahika kai* (customary food gathering practices and places) or *ahi kā* (maintaining presence and responsibility on ancestral lands). *Actions* describe the discrete initiatives or projects that operationalise these practices, such as *maramataka* (seasonal monitoring) or wetland restoration programmes. These key concepts and interpretive definitions provide a foundation for the methodological approach that follows, which centres Kāi Tahu relationality, intergenerational intent, and culturally embedded forms of adaptive practice.

3. METHODOLOGY AND METHODS

This research employs Te Kahu Huruwuru o Kohikohi as a methodological and conceptual framework, understanding research as weaving diverse knowledge strands to create a cloak that protects and enhances participant *mana* (prestige, authority) (Kaiser et al., 2025). Using a Kaupapa Māori bricolage approach, this study combines: *uiui* (interviews) capturing experiences and intergenerational knowledge transmission; Western ecological and adaptation science situating observations within empirical climate change; and policy analysis examining how current frameworks enable or constrain Indigenous-led strategies.

The lead researcher is Māori (Kāi Tahu, Kāti Māmoe, Waitaha), approaching this *mahi* as an insider guided by *whakapapa* obligations and relational accountability. This positionality aligns with *kaupapa* Māori ethics, which emphasises Māori-led research, collective benefit, cultural integrity, and protection of Māori knowledge systems (Smith, 2019; Pihama et al., 2002). The research was conducted with a commitment to care, reciprocity, and mana-enhancing practices that uphold Indigenous authority and ways of knowing.

Twenty participants were interviewed for this research, and a narrative analysis framework (Somers, 1994; Gergen & Gergen, 1998) was used to identify key interwoven strands of climate change adaptation. Participants, representing a range of different ages (mid-20s to over 80 years old) and genders (12 male, 8 female), were selected through *whakapapa* ties and snowball sampling. Most participants have *whakapapa* to Ōraka-Aparima, one of the four Murihiku-based *rūnaka* of Kāi Tahu. Other participants were selected based on their ties to Te Rūnanga o Ngāi Tahu, therefore providing insights into relational dynamics, strategy and priorities at both the Iwi and *rūnaka* levels.

Engagement followed a *tuakana-teina* (participant as teacher/mentor, researcher as learner/mentee) ethic in which participants were regarded as knowledge holders. *Kanohi-ki-te-kanohi* (face-to-face) interaction was prioritised wherever possible, with online interviews during COVID-19 restrictions. *Rakatahi* (youth) were nominated but were not directly interviewed within the project timeframe. Interviews were audio-recorded and transcribed verbatim. Analysis followed a *kaupapa* Māori narrative–thematic approach: first-cycle in-vivo and descriptive coding (honouring participant language) was followed by second-cycle pattern/axial coding and an audit trail of memos that captured analytic decisions. Triangulation tested theme coherence and linked findings to theory through collective author and participant feedback. Transcript return was offered to all participants; all participants provided informed consent; and the study received university human ethics approval (Massey University Human Ethics Committee: Southern B, Application SOB 21/17).

Each participant was assigned a pseudonym based on native species with *whakapapa* to Kāi Tahu, reflecting cultural symbolism and ecological connection. While not all participants appear in this manuscript, every *kōrero* informed the interpretive framework and thematic analysis, shaping the narrative structure and ethical orientation of this work. The findings are discussed in relation to the pseudonyms below (Table 1).

By privileging Kāi Tahu ki Murihiku frames, *whakapapa*, *ahi kā*, *kotahitaka*, and *mokopuna* futures, this research challenges dominant policy framings and centres whānau aspirations and responses to climate disruption.

4. THEORETICAL KUPEKA: FRAMING, EXTERNALITIES AND OVERFLOWS

This research is guided by a layered theoretical framework combining narrative analysis with Callon’s sociological and market-based concepts of framing, externalities, and overflows.

Framing refers to the deliberate effort to define what is included and excluded in a given situation (Callon, 1998). Frames shape how climate adaptation is understood, who is responsible, and what counts as legitimate action. In climate planning, these frames often prioritise technical and economic parameters—carbon targets, infrastructure resilience, and cost-efficiency, while side-lining cultural, spiritual, and relational dimensions central to Māori wellbeing.

Table 1. Pseudonyms and attributes of participants

Participant Attribute	Participant Pseudonym
Rūnaka General Manager	Kahu (Harrier)
Rūnaka Representative	Toroa (Royal Albatross)
Rūnaka Committee Member	Toutouwai (South Island Robin)
Rūnaka Committee Member	Pīwauwau (Rock Wren)
Kaumatua	Taiko (Petal)
Kaumatua	Tītī (Muttonbird, Sooty Shearwater)
Kaumatua	Kākāpō (Ground Parrot)
Kaumatua	Kākāriki (Parakeet)
Kaumatua	Tīeke (Saddleback)
Rūnaka member	Kuaka (bar-tailed godwit)
Rūnaka member	Kererū (Wood Pigeon)
Te Ao Marama Inc kaimahi	Mohua (Yellowhead)
Te Ao Marama Inc kaimahi	Korimako (Bellbird)
Te Ao Marama Inc kaimahi	Tītipounamu (Rifleman)
Te Ao Marama Inc kaimahi	Tokoeka (Southern Brown Kiwi)
Retired Iwi Kaiwhakahaere	Tohorā (Southern Right Whale)
Current Iwi Kaiwhakahaere	Kōtuku (White Heron)
Iwi emergency management specialist	Pōpokotea (White Head)
Iwi emergency management expert	Hoiho (Yellow-eyed Penguin)
Iwi Environmental Policy Expert	Pūkeko (swamp hen)

Callon argues that framing is never complete: “every framing produces overflows” (1998, p. 245). Overflows are the unintended consequences or creative responses that exceed the boundaries of a frame. Similarly, externalities are impacts dominant systems fail to account for, such as cultural severance, ecological degradation, or identity loss, yet weigh heavily on Indigenous communities. These concepts help explain how Murihiku whānau contest externally imposed narratives and reconfigure adaptation through relational, cultural, and intergenerational logics.

Framing theory has been widely applied in climate research to examine how narratives influence policy and public engagement (Guenther et al., 2023). In Indigenous contexts, framing is not neutral; it often reflects colonial assumptions about vulnerability and deficit (Whyte, 2018). Managed retreat, for example, is framed as a technical solution to climate risk,

yet for Māori it can imply cultural erasure and disconnection from *whakapapa* (Bailey-Winiata et al., 2024). These framings produce externalities (unacknowledged costs borne by *whānau*) and constrain adaptive possibilities. Conversely, Māori-led strategies generate overflows: relational practices such as ecological restoration, cultural monitoring, and mokopuna-focused planning that exceed technocratic boundaries and embed adaptation in cultural ethics.

To interpret these dynamics within a Māori worldview, this article utilises the *kupeka* (fishing net) metaphor developed by the lead author (Kaiser, 2026). Here, the *kupeka* represents mainstream climate planning and policy in Aotearoa New Zealand, a net designed to capture certain priorities like carbon efficiency and economic resilience (see Figure 1 below). Each knot in the *kupeka* is a frame, defining what is held and what escapes. Externalities are like unintended catch tangled in the net, impacts that are not necessarily sought but ensnared regardless, such as the erosion of *mahika kai* or cultural identity. Overflows are what slip through the mesh: creative Māori-led responses that escape technocratic boundaries and swim free, generating new possibilities for adaptation. Like a *kupeka* cast into uncertain waters, adaptation is a flexible system that gathers, releases, and reconfigures relationships across time and space.

Dimension	Caught in the net (internalised within dominant frames)	Impacts of fishing (Externalities)	Thriving outside the net (Overflows)
Policy & Governance	Carbon targets, cost-efficiency, infrastructure resilience	Cultural severance, identity erosion, emotional labour of adaptation	Indigenous governance models, whakapapa-based planning
Science & Knowledge	Technical risk assessments, predictive modelling, economic metrics	Exclusion of mātauranga Māori, relational ethics, intergenerational knowledge loss	Kaupapa Māori methodologies, cultural monitoring, storytelling
Adaptation Strategies	Managed retreat, nature-based solutions, hard infrastructure, short-term resilience	Land dispossession, erosion of mahika kai, youth exclusion	Ahi kā practices, mahika kai restoration, rakatahi leadership
Economic Framing	Market-based solutions, extractive models, transactional partnerships	Tokenistic cultural consultancy, inequitable resource distribution	Mokopuna-centred redistribution, community investment, taonga species economies
Temporal Orientation	Short-term planning cycles, reactive adaptation	Failure to plan for intergenerational continuity	Visioning mokopuna futures, long-term ecological reciprocity (utu)

Figure 1. Te Kupeka: Institutional and Scientific framings of climate change

Callon’s concepts can be applied to a Murihiku-based co-governance initiative “Slow the Flow” between Kāi Tahu ki Murihiku and Environment Southland (2022-2025), as an example. Dominant scientific framing has often cast flood risk as a hydraulic/engineering problem with defined levels of service and cost envelopes (Franco & García-Ayllón, 2025). This framing excludes externalities for Kāi Tahu whānau dealing with flood risk, including impacts on *mahika kai* customary food practices, land-use, cultural monitoring, and cumulative ecosystem

co-benefits. By collaborating on the “Slow the Flow” initiative, Kāi Tahu whānau and the local council had the opportunity to generate new overflows, including co-designed nature-based solutions (detainment bunds, wetlands, native afforestation, reconnection of floodplains), wider cultural/community co-benefits, and a draft blueprint for integrated floodplain management (Lawton, 2025). Active reframing of flood risk that includes Kāi Tahu knowledge, values and practice reconceives the problem as a whole-of-catchment system. Mātauraka Māori can be used symmetrically with technical analysis to enable new approaches to slow, store and filter water while strengthening collective community wellbeing.

5. FINDINGS AND DISCUSSION

Murihiku/Southland faces increasing climate pressures, including more frequent and intense extreme rainfall, shifting seasonal patterns (NIWA, 2019), and heightened coastal hazard exposure. Rising seas combined with storm surge are projected to increase the frequency of extreme sea-level events and coastal flooding and erosion, particularly affecting low-lying communities and culturally significant ecosystems along the Southland coast and Rakiura (Dean et al., 2023). The February 2020 Southland flooding event, which triggered the evacuation of approximately people, highlighted systemic vulnerabilities across catchments and settlements (Kaiser et al., 2021). These climate pressures provide the context for the adaptive work undertaken by Kāi Tahu ki Murihiku whānau. Rather than detailing impacts, (addressed in Kaiser, 2026), this article examines how *whānau* respond and adapt to these pressures.

The following findings are presented as woven strands, each representing a key dimension of intergenerational climate adaptation among Kāi Tahu ki Murihiku whānau. These strands emerged through narrative thematic analysis privileging Māori ways of knowing and relational storytelling. Participants’ *kōrero* revealed how climate change impacts are experienced and highlighted tensions within policy and planning.

This article focuses on how Kāi Tahu ki Murihiku whānau actively shape adaptation through restructuring past, present, and future narratives. Rather than accepting the negative externalities borne through mainstream climate change framing, *whānau* are weaving and casting out a new *kupeka*. They are taking externalities of Indigenous vulnerability and transforming them into overflows: strategic mana whenua-led adaptations (see Figure 2). Cultural erasure is transformed into whakapapa-based adaptive infrastructure. Land dispossession becomes *ahi kā* and restoration. Transactional relationships become *kotahitaka*. Exclusion of youth is reframed as *mokopuna* futures.

These narratives and overflows sit within a meta-narrative expressed in the *whakataukī* that titles this article: *Mō tātou, ā, mō kā uri ā muri ake nei* (for us and our children after us), a guiding *kaupapa* for Te Rūnaka o Ōraka-Aparima and Te Rūnanga o Ngāi Tahu’s fifty-year tribal strategy *Mo Kā Uri* (2024).

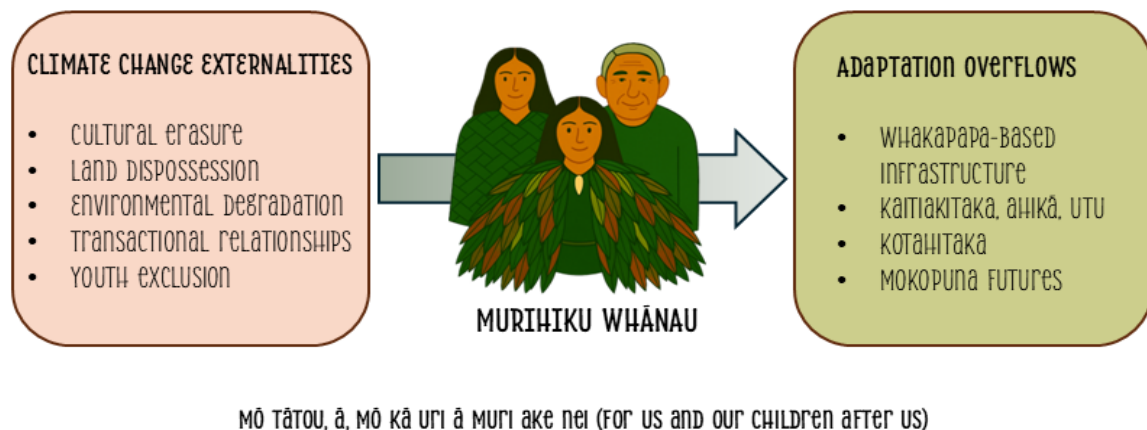


Figure 2. Murihiku whānau transforming externalities into overflows

5.1 Whakapapa-Based Adaptive Infrastructure

In Te Ao Māori, *whakapapa* is both a conceptual narrative and a living infrastructure of knowledge, responsibility, and resilience. It connects people to place, species, and each other across generations, forming the foundation of identity, governance, and adaptation (Angeli-Gordon, 2024; Wehi et al., 2024). As climate change intensifies, Māori communities draw on *whakapapa* to interpret environmental disruption and guide culturally grounded, intergenerational, and spiritually attuned responses.

Contemporary engineering resilience scholarship describes adaptive infrastructure as a system intentionally designed to adjust to changing climate conditions, absorb disturbances, and maintain essential functions over time. Unlike traditional static infrastructure, adaptive approaches emphasise flexibility, learning, and the capacity to evolve in response to emerging risks (often through modular design, nature-based solutions, and continuous feedback loops) (Adelesi & Ajani, 2023; Singh et al., 2023).

In this study, *whakapapa* is understood as a culturally specific form of adaptive infrastructure: a living, relational system that embeds knowledge, responsibilities, and reciprocal obligations to support long-term resilience. As an adaptive system, *whakapapa* provides mechanisms for interpreting change, mobilising collective action, and sustaining intergenerational wellbeing. It therefore functions as a dynamic resilience architecture capable of guiding Māori responses to climate impacts.

Cultural infrastructure refers to embedded values, practices, and knowledge systems sustaining identity, cohesion, and adaptability over time. Scholars of cultural sustainability argue that culture provides a transformative dimension essential to sustainable development, particularly in contexts of disruption and uncertainty (Järvelä, 2023). When grounded in cultural systems like *whakapapa*, adaptive infrastructures enable communities to interpret change, maintain continuity, and enact responses that are socially and spiritually coherent. This framing recognises infrastructure as material assets and socio-cultural capacities that enable adaptation.

This section examines how Kāi Tahu whānau in Murihiku enact *whakapapa* as adaptive infrastructure, navigating climate impacts, restoring relationships with *whenua* and *wai*, and building strategies for *mokopuna* futures.

5.1.1 Cultural Identity and Continuity

Whakapapa shapes how individuals and communities understand themselves in relation to land, history, and each other. Participants described it as a relational system carrying values, responsibilities, and belonging. *Kuaka* reflected on the emotional and cultural significance of reconnecting with *whakapapa*:

“When people spend years trying to find their *whakapapa* and they find it... they think something’s going to happen. But there’s no induction into the hapū... Even for people already part of the Rūnanga... I’ve got to really dig for that information. It’d be mana-building to have more understanding about all that.”

They also noted the absence of visible historical narratives within marae spaces:

“I don’t see a track record when I go into our marae. I don’t understand the trials and tribulations that led to settlement and the apology... I don’t see anything about our land blocks that were taken, and I think we need that.”

This absence was attributed to colonisation and resource constraints. Marae such as Takutai o te Tītī were repurposed from colonial structures, and cultural infrastructure for *whakapapa* transmission was never fully restored. The disconnection described by *Kuaka* and others reflects externalities of colonial systems that ignored Māori relational structures and intergenerational knowledge.

In response, *whānau* have initiated restoration processes including *wānanga* on te reo Māori, *tā moko* (tattoo), *rāraka* (weaving), and workshops for *kaikaraka* (women who call visitors onto the *marae*) and *kaikōrero* (formal speakers). Rūnaka also lead *hīkoi* (journeys) reconnecting *whānau* to *whenua* they were dispossessed from, such as Whenua Hou near Rākiura (Stewart Island). Te Rūnanga o Ngāi Tahu has run online Treaty Claim sessions to support global *whānau* engagement. These actions reframe externalities like cultural disconnection by establishing *whakapapa* and place-based connection as foundations for continuity and climate resilience.

5.1.2 Intergenerational Knowledge and Adaptive Learning

Whakapapa enables adaptive learning between generations, linking kaumātua-held mātauranga with *rakatahi* innovation. This transmission is not about preserving tradition alone; it is dynamic, allowing younger generations to reinterpret ancestral wisdom for contemporary challenges.

Participants described cultural monitoring and storytelling as practices that unite generations, strengthen identity, and foster shared understanding. Pīwauwau explained: “They’ve suddenly got role models that aren’t necessarily yourself... they know the connections, they know who they are, and what this place is about.” However, several raised concerns about succession

planning. Pīwauwau noted: “The younger ones are desperate to help, desperate to find a place, and are maybe not given a space, or a succession pathway.”

Tōroa echoed this: “I don’t see enough young people attending hui... those old folks, they’re not going to be around forever.”

These reflections highlight the need for strategies that support youth leadership, mentorship, and culturally safe spaces for learning. Adaptive learning is reciprocal and focused on enabling rakatahi to lead future climate adaptation.

Tītī described creative approaches for *tamariki*, including storytelling and drawing at marae:

“I talk to them about the tītī and the so-called migrations... I say, righto, draw that picture of that story I just told you... and there’s some great pictures coming out.”

Rūnaka have also leveraged technology, collaborating with Minecraft to develop Patea/Doubtful Sound-themed content featuring *karaka* (welcoming song) and *kaumātua* avatars (Te Rūnanga o Ngāi Tahu, 2025). Such innovations engage *rakatahi* with *whakapapa*, including those living outside the rohe.

Participants advocated for storytelling that connects *waka*, *awa*, *pā* sites, and settlement histories as living knowledge informing decisions. Nearby at Te Rau Aroha Marae (another Kāi Tahu ki Murihiku marae in Bluff, Southland), researchers used *kōrero tuku iho* (oral narratives) to explore ancestor Tamarereti’s travels across Te Moana Nui a Kiwa in search of the Aurora Australis, connecting *kaumātua*, *rakatahi*, and *tamariki* through *whakapapa* as a foundation to look to the future for climate planning.

5.1.3 Historical Reflection and Technological Transformation

Historical reflection also shapes adaptive learning. Kāi Tahu ki Murihiku historian Stevens (2018) referenced moments of technological change that define history for Southern Māori. Tōroa centred these moments around three transitions: from whale oil to aluminium smelting to green energy. Participants framed them as pivotal economic and technological shifts, moments of negotiation and identity redefinition. This framing is both temporal (past-present-future) and relational (between iwi, state, and industry).

Dominant public narratives of energy transitions are framed in market terms (efficiency, cost, and infrastructure), often excluding cultural, historical, and relational dimensions central to Kāi Tahu understandings of energy and adaptation. Participants stressed the need for *rūnaka* to negotiate better outcomes in future transitions and highlighted rakatahi leadership as critical for shaping climate futures.

Kererū shared examples of Māori-led programmes in Tāhuna (Queenstown) that foster energy transition, promote sustainable solutions, and provide cost-reduction advice:

“A lot of the mahi we get in winter is energy hardship. We go into homes, talk about energy efficiency, and educate on electrification—how it can save money... because in

Tāhuna, a lot of homes are still powered by diesel and LPG... and I'm talking real recent developments..."

These examples illustrate how *whakapapa* operates within everyday adaptation practice. The following section explores how *kaitiakitaka* further shapes whānau responses.

5.2 Kaitiakitaka, Ahi kā and Utu as Climate Adaptation

Kaitiakitaka (or *kaitiakitanga*) is a foundational concept in Te Ao Māori, encompassing environmental responsibility, guardianship, and intergenerational care. It is a relational obligation embedded in *whakapapa*. As climate change intensifies, Murihiku whānau enact *kaitiakitaka* through ecological, cultural, and spiritual practices sustaining people and place. Arnt (2021) shows Kāi Tahu upholding *kaitiakitaka* through lobbying and direct climate action despite structural constraints.

Participants framed *kaitiakitaka* as inherited responsibility: "Kaitiaki is a responsibility for numerous things—looking after your knowledge, the environment, yourself, your children, everything. That's what you're born into." (Tokoeke) This ethic extends beyond the ancestral environment to include care for *whakapapa*, *mātauraka*, and community wellbeing.

Whānau narratives emphasise continuity and collective responsibility. Tīeke noted: "Kaitiakitanga... well before predator-free Rakiura came along. We've always cared for these manu so our mokopuna can do the same." Kākāpō added: "Because I'm a tangata kaitiaki. We're guardians. We monitor, educate, and listen." Here, *kaitiakitaka* is situated as attentiveness through listening, learning, and teaching.

Yet, participants expressed frustration at community apathy and under-resourced governance: "Who's dealing with this beautiful piece of native bush? Look at the weeds, the possums. Who's doing anything about it?" (Kākāriki) Such neglect reflects externalities of systemic underinvestment, leaving ecological and emotional costs to *whānau* who uphold *kaitiakitaka* regardless. Tītī reinforced the collective nature of *kaitiakitaka*:

"We keep challenging each other, reminding ourselves it doesn't belong to anyone... We're all just kaitiaki, looking after it for future generations. Kaitiakitanga is not a privilege, it's a responsibility."

This dialogue reflects environmental governance founded *whakapapa*, exceeding formal climate planning that frames land as commodity and adaptation as technical fix. Whānau resist externalities like environmental degradation by centring shared responsibility. Similarly, Tīeke highlighted the Tītī Islands' role in transmitting conservation values: "We go there not only to harvest but to care for the motū. Those values are passed from our parents at a very young age."

Place-based practices embed *kaitiakitaka* in everyday life. *Whānau* also integrate international science to strengthen resilience, reframing it through *whakapapa*: "To make what's right in Murihiku, we'll use overseas science to see how we can make things more resilient—not just for our environment, but for our people." (Tokoeke) Rather than absorbing

technocratic models, *whānau* selectively adapt science within cultural frameworks, creating overflows that exceed dominant economic and technical paradigms.

Recent scholarship reinforces the conceptual narrative of *kaitiakitaka* an ethic, a practice and as a climate adaptation strategy. The Deep South Challenge's *Te Ara o Raukawa Moana* project highlights how reconnecting to coastal landscapes and enabling intergenerational knowledge transfer are central to exercising *kaitiaki* obligations. McDonald et al. (2025) demonstrates that voyaging communities respond to climate disruption through intrinsic motivation to uphold *kaitiakitaka*. Likewise, the work of Murihiku *whānau* shows how adaptation is grounded in *kaitiakitaka*, sustained through intergenerational care, and embedded in overflows that dominant frameworks often ignore (Nursey-Bray et al., 2022).

5.2.1 Ahi Kā

Ahi kā, the practice of maintaining presence and responsibility on ancestral lands, was a second conceptual narrative identified in the *uiui*. Excluding relational practices like *ahi kā* from mainstream climate planning creates externalities such as land dispossession and erosion of *mahika kai* through managed retreat. In Murihiku, *ahi kā* is enacted through deliberate ecological and cultural responses: remaining on or returning to ancestral lands, restoring ecosystems, and sustaining *mahika kai* despite disruption. For many, *ahi kā* means holding ground in the face of change, through ongoing connection, responsibility, and whakapapa ties.

Tītī reflected on past relocations:

“We’ve had to move marae before. It’s not about leaving, it’s about adapting. You don’t just walk away. You take the stories, the mana, and make sure the next generation knows where it came from.”

Tohorā offered a pragmatic view: “Another decade, they’re gone. We’ll move them or they’ll go. That’s reality. But it doesn’t mean we lose our connection. It means we have to be smart about how we keep it.” These reflections challenge managed retreat frameworks that treat relocation as cultural severance. As Bailey-Winiata et al. (2024) note, historical Māori relocations were strategic and grounded in whakapapa. Contemporary adaptation must follow these principles, recognising *ahi kā* as sustained through cultural practice, as well as occupation.

Dominant climate frameworks often marginalise long-term relational dimensions of Indigenous adaptation (Johnson et al., 2022; Mannakkara et al., 2023). Strict locationally-bound climate change plans reinforce colonial challenges to ancestral practices for *whānau*, such as moving seasonally to different *mahika kai* sites. Kuaka explained:

“We used to move marae all the time back in the day. We were nomadic... They moved from Tītī Islands up through Waiāu... through Manapōuri... and then looped back down when it started getting cold.”

This mobility reflects an overflow from rigid notions of place-based identity, embracing historical patterns of seasonal and strategic movement that inform contemporary adaptation. *Whānau* continue to practice seasonally-based *mahika kai*, however colonisation and land

dispossession have reduced access to sites over time. *Whānau* are actively reclaiming these practices and re-asserting their strong links with the environment through strategies and plans.

In 2021, Cain and Manihera authored *Āpiti Hono Tātai Hono: Ngā Whenua o Ngāi Tahu ki Murihiku*, a Southland Cultural Landscape Assessment Study (Cain & Manihera, 2021). It provides a Kāi Tahu-designed methodology grounded in *Ira Atua Ira Tangata*, a whakapapa-based framework integrating metaphysical and physical relationships across time and space. This approach challenges Western planning paradigms by recognising deep interconnections of land, water, flora, fauna, atua, and people.

The report affirms participant narratives: *ahi kā* is not defined by static occupation but by ongoing cultural practice and intergenerational responsibility. Movement or relocation does not sever ties, but it requires strategic reconfiguration to maintain *ahi kā* and through linkages to *mahika kai* sites.

5.2.2 Utu

Dominant climate adaptation frameworks often frame restoration and adaptation around short-term, measurable outcomes such as carbon sequestration, biodiversity targets, or infrastructure resilience (Almassi, 2022; Knights, 2014). These framings prioritise technical fixes over relational or cultural processes, treat restoration as a project with an endpoint rather than a continuous relationship, and view food systems like *mahika kai* through productivity or food security lenses instead of cultural and ecological knowledge systems.

In contrast, participants framed environmental reciprocity through the principle of utu, a concept encompassing balance in relationships, communities, and the environment (Barnett, 2021). Utu, expressed as ecological reciprocity, was described as central to *kaitiakitaka*. Examples included riparian planting, pest eradication, species translocation, and replanting taonga species. Tiako explained:

“I’m trying to bring back the muttonbird trees from the islands and plant them on the coast... but we need a hundred years of leaves before the ground’s enough for them to burrow into. It’s not going to happen in my lifetime, but that’s ok.”

Here, planting becomes an intergenerational act of repair. Kererū emphasised water restoration: “We want to see that water back to a state our tūpuna would have had... the waterways are the arteries of our whenua and Papatūānuku. We want to see them thriving in fifty years.” These narratives shift adaptation from short-term metrics to long-term relational care. Kuaka highlighted the cultural dimension for *rakatahi* in particular, “the fact that they’re planting trees... every time they go past for the rest of their life, it’ll be a reminder... what they’re doing does impact the environment.”

Such practices foster cultural resurgence and intergenerational learning (Morrison & Kaio, 2024; Marsden, 2003). Using the *kupeka* metaphor, they generate positive overflows, beyond technical goals, such as cultural continuity and ecological resilience.

5.2.3 Mahika Kai as Climate Strategy

Participants described *mahika* (or *mahinga*) *kai* as both a cultural right and a climate strategy, a living system of food gathering, ecological observation, and *kaitiakitaka* (Dacker, 1990). Regionally, evidence syntheses (Morrison et al., 2023) link reduced sediment and nutrient loads from riparian and wetland restoration to improved *kaimoana* habitat condition, aligning with *whānau* observations of the relationship between land-based actions and coastal *mahika kai*. Kuaka explained:

“Our cultural identity is reliant on mahinga kai. If you take away the right to mahinga kai, you lose your cultural identity... it’s not just planting trees, it’s understanding cumulative effects and being able to enact mahinga kai.”

Tokoeka noted climate-driven shifts: “Mahinga kai has been hugely affected by climate change. Instead of eating blue cod [a southern cold-water species] we might be having snapper [a northern species]. That’s a big shift. But we’re adapting.”

Tītī described the practice of *mahika kai* as environmental monitoring: “You see it in the birds, in the trees, in the water. You know when something’s off.” He also stressed the importance of reflective and iterative planning to ensure sustainability in the face of climate change impacts, particularly regarding *whānau* harvesting of Tītī:

“...it might be that we have to set ourselves in a different way of management, not all the time, not every year, or whatever, and those things will, and how do we know when, when we need to change, and I don't know what the, how easy it's going for whānau to change without, because for some that's the only thing they've got, and it's really difficult, and it's a really difficult situation, how do you make sure the social mechanisms and the institutions around them protect their identity, when the only thing they've got are the tītī coming?”

There are issues of equity that come into adaptation planning when prioritising sustainability. Support for *whānau* who are dependent on muttonbirding and other *mahika kai* practices for their livelihoods needs to factor into collective decision-making. However, *whānau* adaptation practices in the form of sustainable *mahika kai* management represent proactive adaptation action that reaffirms whakapapa, supports food sovereignty, and looks to maintain local ecosystems in balance through future escalating climate change challenges.

5.3 Kotahitaka and Strategic Relationships

Kotahitaka, the principle of unity and collective purpose, was described by participants as a foundational ethic in climate adaptation. Among Kāi Tahu whānau in Murihiku, *kotahitaka* is enacted through relational governance, strategic partnerships, and cultural leadership. Participants emphasised that *kotahitaka* must be cultivated through trust, shared experience, and long-term commitment.

Kaumātua were acknowledged as key initiators of strategic relationships with councils, government agencies, and other *iwi*. These relationships were often strengthened in informal

settings, where cultural foresight and interpersonal trust enabled more meaningful engagement than formal consultation. Tītī reflected:

“You’re sitting around a table and you’re having your formal meetings, but quite often you get more done in the drinkies afterwards. You sit down and you build those relationships with those people. If you can build a relationship with those people and convince them that this is the way to go and the reasons for it. You can’t convince them across the boardroom table, you’ve got to have that social time with them.”

Callon’s framing theory helps explain how *whānau* reshape institutional engagement. Rather than accepting transactional frames of partnership (Wilson et al., 2022), participants reframed collaboration as whakapapa-based and culturally accountable. Pīwauwau described:

“Ngāi Tahu ki Murihiku had a strong relationship with councils because we had some quite amazing kaumātua that actually realised early on that they need that relationship, and they built on it. So, the relationship wasn’t forced because of a policy statement or a national directive. That was already there. It gets tested and strengthened as we go along.”

Kotahitaka was also described as a relational ethic that must be actively sustained:

“We keep challenging each other, you know, reminding ourselves that it doesn't belong to anyone. We're all just kaitiaki, and we're only here looking after it for our future generations, really.”

This framing of shared guardianship reflects *kotahitaka* as an embodied practice enacted through everyday relationships.

Institutional planning often defines partnerships in terms of deliverables and timelines, excluding the relational labour and cultural ethics underpinning *kotahitaka* (Puig et al., 2025). These exclusions function as externalities, in the form of unacknowledged costs borne by *whānau*, including emotional labour, time, and cultural risk. In contrast, mana whenua-led initiatives such as Iwi and Hapū Management Plans (IHMPs), cultural monitoring, and restoration projects represent overflows. *Te Tangi a Tauira* (Ngāi Tahu ki Murihiku, 2008), the IHMP for the four rūnaka ki Murihiku, was the first of its kind to acknowledge climate change issues and represents a collective shared vision and strategy. Local and regional councils are required to take IHMPs into account in their own planning (Kaiser & Kenney, 2022; Saunders & Kaiser, 2019). Therefore, by including climate change-specific strategies and actions, Iwi have the opportunity to embed their planning and resource management priorities into regional plans of territorial authorities.

Kotahitaka was described as inseparable from *kaitiakitaka* and *tino rakatirataka* (self-determination), guiding decision-making, shared responsibilities, and relationship maintenance. Participants reflected on tensions within the *iwi*, such as dairy farming decisions where economic imperatives conflicted with environmental values. Tītī recalled: “With Te Rūnanga, Ngāi Tahu getting into dairy farming, I was on the board at that time when they decided to do that, and we were going, no, don’t go there!”

Kāi Tahu governance regularly balances economic opportunities (e.g., primary production investments) with environmental sustainability. Ngāi Tahu Holdings Corporation and subsidiaries are required to produce climate change response plans under the Ngāi Tahu strategy *Te Tāhū o Te Whāriki*. Tensions over how best to balance economic and environmental sustainability have yet to be resolved. However, participants described robust and regular as part of *kotahitaka* in practice—seeking pathways that maintain intergenerational wellbeing as an outcome rather than privileging short-term financial gains.

Participants also addressed structural constraints such as fragmented policy, inconsistent government engagement, and under-resourcing are limiting full expression of *kotahitaka*. Pīwauwau noted:

“The central government seems to dictate what that means on the ground level, particularly for whānau. Sometimes the central government has to put the directives, but then they have to butt out and not interfere. Every place will be slightly different; they’ll have slightly different issues and also have different relationships.”

Another participant reflected on the cultural costs of fractured relationships:

“People get so caught up in those sort of old grudges that they end up missing those opportunities which is a shame especially when it’s multi-generational feuds about stuff that people don’t even really remember anymore.”

Despite these constraints, *whānau* sustain *kotahitaka* through cultural leadership, relationship building, and strategic innovation. The Murihiku Southland Regional Climate Change Strategy (Environment Southland, 2024) and its Framework for Action (Environment Southland et al., 2025) demonstrates adaptation outcomes for *whānau* through the inclusion of *kotahitaka* in the governance model. Kāi Tahu ki Murihiku, councils, and communities are united for structured climate action. Operationally, this has meant Kāi Tahu ki Murihiku representatives sit within the regional climate governance structure and shape programme prioritisation and work planning, rather than being limited to consultation rounds. As an outcome, project workstreams (for example, “Slow the Flow”) explicitly require *iwi* sign-off at key decision gates.

Participants stressed *kotahitaka* must be nurtured through *hui*, community action, and visible values in decision-making. As Tītī put it: “It’s not just about agreeing. It’s about holding each other to account, because we’re all responsible for what comes next.” In this context, *kotahitaka*, and relationships with *rūnaka*, *iwi*, councils, and beyond, are central to effective climate adaptation, woven through whakapapa and directed toward *mokopuna* futures.

5.4 Visioning Mokopuna Futures

Among Kāi Tahu whānau in Murihiku, climate adaptation was consistently framed as a responsibility to *mokopuna*. Participants described this not as a rhetorical gesture, but as a practical ethic that guides decisions about land, species, governance, and economic strategy. Mokopuna futures were invoked as both a horizon and a mandate, an obligation to ensure that

future generations inherit not only thriving ecosystems, but thriving systems of knowledge, connection, and choice. Toroa stated:

“I think like your generation, you know, I feel like you will all have a different outlook on the situation. You know, you have to adapt. I mean, we've done this. Ngāi Tahu especially have always adapted to situations, and I don't see any difference in it, really. I think we will adapt. We have no choice, you know, but you've got to look forward like that.”

Tokoeka agreed and articulated this responsibility with clarity:

“They'll be born into this world... we have to leave them the knowledge to survive in it.”

This knowledge was described as relational and ecological, encompassing mātauranga Māori, practical skills, and cultural ethics. Participants framed *mokopuna*, not as passive recipients of inherited challenges, but as future kaitiaki who must be equipped to lead. Tītī reflected on his own role in this intergenerational transition:

“I'm 72 now and I'm thinking, how much longer have I got where I'm going to be in a position like being a part of Te Ao Mārama and being a part of Rūnaka? Right now, I've got some influence. I go to councils, I know all the councillors, and when I've got something to say, they listen. I remember when I first got involved, I'd go to these council meetings and say, 'This is not [Tītī] speaking. This is a Rūnaka speaking.' So, while I've got that influence, I want to do as much as I can—especially in climate change. I want to challenge people. And I want them to challenge me back if I'm heading down the wrong track.”

The emotional and cultural labour of *kaumātua*, like Tītī, who work to transfer influence and knowledge before their time ends, is an externality, unseen and unsupported by institutional structures.

Economic decisions that prioritise extractive models over mokopuna wellbeing (e.g., tokenistic cultural consultancy vs. community investment) also represent externalities that undermine long-term resilience. Participants rejected deficit-based framings that position Māori communities as vulnerable or reactive. Instead, they constructed a strengths-based frame in which adaptation is a generative process rooted in whakapapa, cultural foresight, and mokopuna wellbeing.

The exclusion of *rakatahi* from strategic climate planning is an externality. It reflects a failure to recognise youth as decision-makers and future leaders. McMeeking et al. (2025) discuss how storytelling and *pūrākau* support Indigenous youth leadership in climate futures, framing rakatahi as capable agents of change. Kōtuku reflected on the potential value of a rakatahi-led review of Ngāi Tahu's climate strategy:

“Perhaps one of the first steps would be having a Ngāi Tahu climate rangatahi group actually review our Te Kōunga Paparangi strategy and provide some expert advice and guidance on that. Because if anything, it's going to be our rangatahi that are left to implement and carry that in future generations.”

These reflections point to a critical tension in adaptation planning. Institutional frameworks often frame youth engagement as symbolic or supplementary, rather than strategic (Ingaruca et al., 2022). This exclusion functions as an externality in Callon's terms, an unacknowledged consequence of planning that fails to centre *mokopuna* as decision-makers. In contrast, whānau-led initiatives that support *rakatahi* leadership, cultural monitoring, and intergenerational wānanga represent overflows. These practices exceed the boundaries of formal adaptation frameworks and reconfigure climate governance around *mokopuna* futures.

Participants also spoke about economic strategy as a site of adaptation. Kōtuku emphasised the need to move beyond reactive inclusion and toward proactive enablement:

“If a company reaches out to Ngāi Tahu and says, ‘Hey, we’d like a partnership and offer some cadetships,’ we often say, ‘Okay, let’s go there.’ But I don’t know if we’re actively saying, ‘Where are the big players in the climate space, and how can we expose rakatahi to those opportunities?’ That’s a good challenge to the table.”

Kuaka offered a sharp critique of extractive models and tokenistic cultural engagement:

“Let’s get a cultural... what do they call it? Consultant. Fuck that. We don’t want just a cultural consultant. If we get Lord of the Rings doing a one-billion-dollar film in our takiwā [region], we want 10% of their royalties off that film so we can put it back into the community. We don’t want a consultant on the ground saying a karakia [incantation] and getting paid 300 bucks an hour to sit there for two years. Let’s manaaki [hospitality, care] back to the whenua. And if we do that, it’ll be able to impact people.”

This critique exposes the framing of cultural engagement as a transactional add-on, where Māori presence is commodified rather than enabled. Kuaka’s call to redirect royalties into community investment reflects an overflow: a strategy that exceeds the narrow economic framing of cultural consultancy and reasserts mana whenua governance and mokopuna-centred redistribution. Kuaka also reflected on missed opportunities in the mānuka honey industry:

“There’s actually opportunities there for the mānuka industry. If we’d set up some form of control—like a trust that mānuka companies, a central distribution network for mānuka honey—you could plant your farm block into that and the trust controls distribution. Then the money goes back into the protection of that plant. Pest control. Massive opportunity. Massive missed opportunity for one of our taonga species that brings in billions of dollars worldwide. And now we’ve got mānuka honey in Australia.”

These critiques reveal how economic decisions are deeply tied to mokopuna futures. Participants were asked not only what kind of ecosystems would be inherited, but what kind of systems, economic, cultural, and political, should be in place to support mokopuna wellbeing. Tītī reflected:

“Ultimately, everyone wants the same thing. As far as I can figure, they want a good future for the future generations, for the children and such like to come through. But I think there’s a whole lot of greed in amongst all that too. But ultimately, that’s where everyone wants to go.”

He also spoke about the importance of imagination:

“Try to get those new generations to imagine. Imagine if we could have this—and it is actually achievable, eh? To get them to understand that it is achievable, because I still believe it is.”

This emphasis on imagination resonates with Māori and Indigenous futurist scholarship, where future-making is understood as a deliberate act of cultural continuity and sovereign design. Thinkers such as Simpson (2017) and Yates-Smith (2019) describe Indigenous futures not as speculative fiction but as grounded in ancestral relationships, lived responsibilities, and the creative regeneration of knowledge. In Aotearoa, Māori futurism emerges through mokopuna-focused planning, narrative practice, and innovation that resists colonial timeframes and affirms *tino rakatirataka*. As participants in this study made clear, envisioning mokopuna futures is a strategic form of climate leadership that reconfigures governance around Indigenous priorities and long-term care.

Participants reflected on the need for individual attitude shifts. Tītī described his own discomfort with fossil fuel use:

“I’ve got a big old diesel van at home... occasionally you pop the foot on the accelerator, there’s a big puff, smoke comes out the back, and I think, man, I don’t even want to start it up anymore. But we’ve got to get people thinking about that. Everyone’s still buying diesel vehicles. Trying to get the clean green. But they’re not thinking about the waste. The waste at the end of the day.”

Despite these challenges, the tone of this *kōrero* was one of clarity and determination. Participants described mokopuna futures as a guiding ethic for adaptation that creates space for future leadership.

6. CONCLUSION

The findings of this research demonstrate that Kāi Tahu whānau in Murihiku are actively reshaping understandings of climate adaptation. From the IPCC definition regarding “the process of adjustment to actual or expected *climate* and its effects, in order to moderate harm or exploit beneficial opportunities” to “an ongoing, relational process through which Kāi Tahu whānau adjust and redesign social–ecological relationships to sustain *whakapapa*, wellbeing, and *tino rakatirataka* (sovereignty) under climate- and policy-driven change”. This specific form of adaptation is being instituted through culturally grounded, intergenerational, and relational strategies, systems of practice and actions.

Across four conceptual strands, whakapapa-based adaptive infrastructure, *kaitiakitaka*, *ahi kā* and *utu*, *kotahitaka* and strategic relationships, and visioning mokopuna futures, participants described strategies that restore whenua, revitalise *mahika kai*, embed intergenerational knowledge in governance, and cultivate rakatahi leadership. These actions reconfigure adaptation as a continuous, culturally coherent practice. They also challenge deficit-based framings that position Māori communities as passive or vulnerable, asserting instead a strengths-based narrative of resilience, foresight, and innovation.

Whānau responses address externalities, those often-unacknowledged costs of mainstream climate planning, such as colonisation, cultural erasure, land dispossession, and youth exclusion. These externalities are manifested in the loss of *mahika kai*, the erosion of intergenerational knowledge systems, and the emotional labour of sustaining cultural identity under systemic neglect. Rather than accepting these constraints, Murihiku whānau transform them into overflows: creative, relational practices that exceed technocratic boundaries and embed adaptation in cultural continuity.

To conceptualise this shift, the *kupeka* (fishing net) metaphor offers a powerful lens. Mainstream climate policy in Aotearoa operates like a *kupeka* designed to capture specific priorities (carbon targets, infrastructure resilience, economic efficiency) while letting cultural and relational dimensions slip through its mesh. Yet Murihiku whānau are not simply escaping the mainstream adaptation *kupeka*, instead they are weaving a new one. This Indigenous *kupeka* is constructed from strands of *whakapapa*, *ahi kā*, *kaitiakitaka*, *utu*, and *kotahitaka*, knotted together through relationships and strategic vision. It is a flexible, living system that gathers knowledge, releases constraints, and reconfigures adaptation around the *whakataukī* (proverb) *mō tatou, a mo ka uri, a mui, ake* (for us and our children after us). In this *kupeka*, strength lies not in a single strand but in the collective future-focused weave, a network of practices that sustains identity, restores ecosystems, and prepares *mokopuna* for leadership.

By reframing adaptation as a long-term process of weaving rather than capturing or simply responding, Murihiku whānau demonstrate that climate resilience can be relational and aspirational rather than reactive and fear-based. It is enacted through dialogue, reciprocity, and imagination, through planting trees that will not mature in one lifetime, restoring waterways for future generations, and embedding enduring culture in governance and practices. These strategies affirm that adaptation goes beyond surviving disruption towards designing futures that honour whakapapa and uphold *tinō rakatirataka*.

The implications are clear: climate planning in Aotearoa must move beyond narrow policy nets and embrace frameworks that recognise Indigenous knowledge as infrastructure, not as an add-on. In Murihiku, this shift is already underway: Kāi Tahu ki Murihiku-led cultural and environment regenerative work in tandem with co-governance and the collaborative regional climate strategy/framework signal movement. Kāi Tahu ki Murihiku whānau offer a blueprint for transformative adaptation, a *kupeka* woven for *mokopuna* futures, strong enough to hold cultural integrity and flexible enough to adapt to the changing tides of climate disruption.

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GLOSSARY

Māori Terminology	English translation
Ahi kā	continuous occupation
Aotearoa	Common Māori name for New Zealand
hapū	Māori sub-tribe
harakeke	flax
hui	meeting
iwi	Māori tribe
kahu huruhuru	feathered cloak
Kai Tahu	an iwi or tribe based in the South Island of Aotearoa New Zealand, otherwise known as Ngāi Tahu
Kāi Tahu ki Murihiku	an iwi or tribe based in deep South of Aotearoa New Zealand.
kaitiaki	guardian or steward
kaitiakitaka/kaitiakitanga	guardianship or stewardship
kanohi ki te kanohi	face to face
kaumātua	elders
kaupapa	values or foundation
kauapapa Māori	Māori approach, philosophy, and set of values rooted in Te Ao Māori (the Māori world)
kohikohi	coming together, gathering
kōrero	interviews or discussion
korowai	cloak
kotahitaka/kotahitanga	unity
kupeka	fishing net
kura	school/s
mahika kai/mahinga kai	customary food gathering practices and places
mana	prestige
mana motuhake	The collective authority and autonomy of whānau, hapū, or iwi to make decisions according to their own practices, values, and responsibilities. It reflects Māori control over their cultural, political, and social wellbeing.
Mana Whenua	Authority over ancestral land, iwi, hapū or rūnaka with paramount authority over ancestral land
manaakitaka/manaakitanga	generosity or hospitality
marae	communal meeting house
maramataka	lunar or seasonal calendar
mātauraka	knowledge
mauri	life force, essence
moana	ocean, seas
mokopuna	Future generations, grandchildren
Murihiku	The Southland region of Aotearoa New Zealand
kā/ngā hou	feathers or data
kākāpō	A rare parrot, native to Southern Aotearoa New Zealand
noa	profane

rakatirataka/rangatiratanga	self-determination
pīkao	Native sedge grass that grows in coastal areas.
pūrākau	inter-generational stories
rakatahi/rangatahi	youth
rakatira/rangatira	respected leaders
Rakatirataka/rangatiratanga	sovereignty
rūnaka /rūnanga	Local/regional Māori councils i.e. Ōraka-Aparima
Takata/Tangata Whenua	Indigenous Peoples of Aotearoa New Zealand
takiwā	region
Te Ao Māori	the Māori world or Māori worldviews
Te Ara a Kiwa	The Foveaux Strait, separating the bottom of the South Island and Rakiura (Stewart Island)
Te Kahu Huruhuru o Kohikohi	“the feathered cloak of Kohikohi”, a kaupapa Māori methodology
Te Reo Māori	the Māori language
Te Rūnanga o Ngāi Tahu	governing body of the Iwi Kāi/Ngāi Tahu
Te Tiriti o Waitangi	The Treaty of Waitangi- the 1840 agreement between Māori and the British Crown that established a framework for shared authority, guaranteeing Māori tino rakatirataka (sovereignty) while granting the Crown governance, forming the constitutional basis of Aotearoa New Zealand.
Te Waipounamu	Common name for the South Island of Aotearoa New Zealand
Takaroa/Tangaroa	deity associated with the ocean
takiwā	region
taoka/taonga	treasured items
teina	younger sibling/mentee
tika	Appropriate process
tikaka/tikanga	cultural practices, protocols
tino rakatirataka/ tino rangatiratanga	The highest expression of Māori self-determination and chiefly authority, affirmed in Te Tiriti o Waitangi. It encompasses the right of iwi and hapū to govern their people and lands according to their own aspirations.
tītī	muttonbirds/ sooty shearwaters- a treasured species and food source for Kāi Tahu ki Murihiku
tohu	Environmental signs and indicators
tuakana	Older sibling/mentor
tūpuna	ancestors
tūrakawaewae/turangawaewae	a place to stand and speak from
uiui	interviews
urupā	burial grounds
utu	balance, reciprocity
waiata	song or songs
wairua	life force
wānaka/wānanga	workshops
whakamana	empowering

whakaaro	thinking
whakawhanaukataka/ whakawhanaungatanga	building relationships
whānau	families
whakapapa	genealogy, ancestry
whakataukī	proverb
whenua	land